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Time & Society

Understanding Event-based Business Networks

Laurids Hedaa and Jan-Åke Törnroos

ABSTRACT. This article deals with the temporality in business networks. Marketing as networks approach stresses interaction processes and interdependence among actors noting that business markets are mainly socially constructed. The approach has increased our understanding of business marketing but further attention for theory development and empirical validation is needed. Theoretical foundations of the approach are conceptually analysed here, taking time and timing into particular consideration. A model of event networks is developed as an approach to understand temporality in business networks. The event network perspective is exemplified using practical cases. It is argued that extensions of network theory, methods and models can be approached using connected events as a base.
KEY WORDS business networks; event networks; events; time

Introduction

> I claim not to have controlled events, but confess plainly that events have controlled me. (Lincoln, 1864)

In contemporary research in marketing, the role of relationships and networks has replaced discrete transactions and has developed into a core perspective, or paradigm, for marketing. This concerns especially business-to-business and international marketing as well as marketing of services (Webster, 1992; Anderson et al., 1994; Håkansson and Snehota, 1995; Möller and Wilson, 1995; Sharma, 1995; Ford, 2002).

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When a new paradigm constitutes itself, different insights and ideas emerge. Moving from discrete exchange transactions used in neoclassical economics, where there is neither past nor future, to longer term interconnected seller–buyer relationships, time becomes an important issue. Still, time has barely been touched on as a separate philosophical or sociological category in the 'markets as networks' approach. The need to include time and process in network research has also been noted to some extent (see Hedaa and Törnroos, 2002; Ford and Håkansson, 2006).

Time and temporality have been more extensively studied within sociology and other social sciences that could enrich the understanding of change and evolution of business networks (see Gurvitch, 1964; Clark, 1985; Adam, 1995). Developing models about the processual dimensions of business networks may benefit from taking an excursion into social sciences explicitly focusing on time. Using time concepts as springboards for a more complete and coherent understanding of these mainly socially constructed business networks is a promising avenue (for a closer examination of the use of the network metaphor in different fields of social sciences, see Araujo and Easton, 1996).

The interaction and network school of thought in marketing has been strong and growing, especially in Europe since the 1980s, as opposed to the classical, more 'economic-based' marketing management approach that is still dominating the field, especially in North America. The research in business marketing has been mainly nomological-deductive in the United States (US) but increasingly inductive and empirically driven in Europe. In this conceptual article, the more 'European-inspired' track is followed, wherein the network approach to marketing is developed.

The network approach to marketing uses temporally loaded terms and vocabulary. The use of theoretical constructs and the relation to practical research, theory and models is raised here with the perspective taken on time and timing, and especially by focusing on events in order to understand business networks.

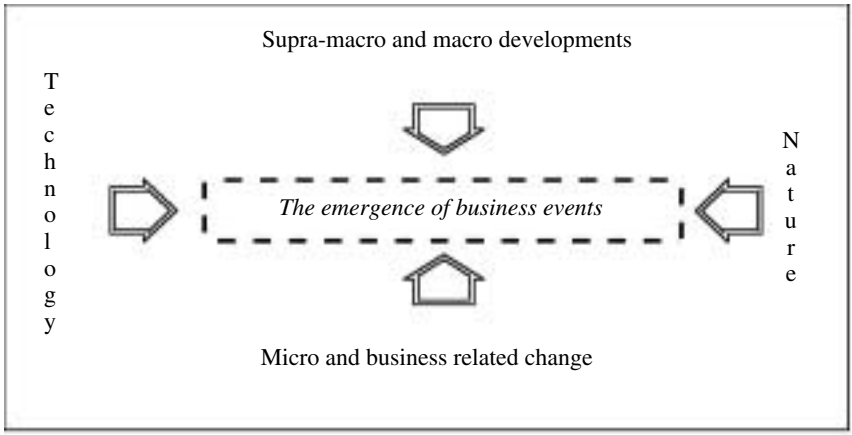
The article is divided into four sections. First, we discuss actor-based business network models by extending the basic concepts in the model to include time, timing and events in business markets. Second, we suggest connected events (event networks) as a theoretical foundation for the study of time and processes in business relationships. Also, we take some methodological aspects into consideration. Third, we present ideas to extend the horizon of event-based marketing networks, deepening some temporal concepts, particularly the event concept, illustrated by empirical examples and perspectives of event networks. Fourth, we provide suggestions for further research and empirical studies of business networks using the proposed event network model.

Networks and Temporality

In social exchange theory, networks have been defined as 'a set of connected exchange relationships' (Cook and Emerson, 1978: 725). This definition can be directly applied as a context for business markets. The offered perspective indicates that actors (whether individual decision makers, organizational subsets or firms) are interconnected, and exchanges between them will form links, ties and bonds through the combination of activities, actors and resources. (It is usually named the 'ARA model' in the scientific community of the Industrial Marketing and Purchasing group, IMP; see http://www.impgroup.org/). In the ARA model, the actors in business markets typically form long-lasting relationships by developing trust and commitment between interacting buyers and sellers, intermediaries, service providers and other involved actors (Håkansson, 1987; Håkansson and Snehota, 1995). These are some of the core theoretical and empirical concepts used within the business network approach (Håkansson, 1987; Håkansson and Snehota, 1995). The offered perspective means, consequently, that more 'socially constructed' phenomena come into the fore than in the traditional (neoclassical) theory of markets. This does not, however, indicate that the economic variables should be ignored, but should be considered as being *embedded into the process of interaction* between the actors in the business network.

There are, however, issues to tackle and critically analyse the relevance of this ARA model. The model states that networks are formed in business markets as interplays between actors who perform activities and possess, or are in control of, certain resources and assets which then are combined in the evolution of long-term relationships. Håkansson and Snehota (1995) have suggested extending this basic model by differentiating connections as activity links, actor bonds and resource ties. However, this view may limit the network perspective to structures at the cost of processes when conducting empirical studies and by reducing the theoretical base of the original ARA model (see Laestadius, 1995).

The network perspective to marketing implies that networks are stable as well as changing (through mutual adaptations they change in order to stay the same). They are temporally and spatially embedded, socially constructed entities. Change processes can be caused by forces internal or external to the focal net that is investigated. The focal net is that part of a network that is predetermined by the researchers or the focal actors to reduce complexity. The internal (intra-net forces) as well as the outside network forces (extra-net related) are sources (or causes, roots) for events to come into play (see Figure 1). We are aware of the problem of network boundaries – defined, for example, through their 'openness', as being tight or loose, by inclusion of direct and indirect connections, or by delimiting them by certain types of actors. The boundary problem belongs to system theory and is tackled here by using the focal net actors of the business



Macro perspectives:
- The 'triad' in the world economy
- Free trade development
- Capital markets
- FDI and MNC developments
- Global sourcing and production
- Regional markets within regions

Micro perspectives:
New management (BPR, JIT, KAM, etc.)
- Vertical disintegration of firms
- Stiffer competition
- Outsourcing
- Relationship-orientation

FIGURE 1
The emergence of events in business networks

network to delimit the 'internal' network, and by placing all other definable actors as extra-network related.[1]

All kinds of 'surprises', i.e. non-expected events 'where common sense fails' (Casti, 1994), are often the engines for change in societal contexts, including business-to-business networks. The inherent characteristics of these combined forces have been hardly noticed in the network approach to marketing. The critical incidents technique comes close in order to highlight temporally specific events that have caused change (Flanagan, 1954; Edvardsson and Luukkonen, 1996; Hedaa, 1997). These critical events have been mainly studied from the 'insider' perspective; that is, from some core actor(s) who is (are) a part of the network (see, for example, Halinen, 1994). These studies look more exclusively at methods in a longitudinal sense, not at theories that would be 'time-driven'.

The notions of process and connectedness between actors include temporality (and spatiality). In order to understand marketing phenomena in business net-

works, one has to take this aspect into account. The use of concepts like exchange episodes, interaction processes, network development and evolution, network change, relational contracting and exchange denotes temporality in the applied models and theories. One might, however, quite strongly argue that deeper insights about temporality inherent in these concepts are not made very explicit by actual theoretical and empirical research. Longitudinal studies in business marketing exist already to some extent (see Rosson, 1986; Liljegren, 1988; Waluszewski, 1990; Lundgren, 1991; Smith and Laage-Hellman, 1992; Halinen, 1994; Salmi, 1995; Alajoutsijärvi, 1996). The temporal perspective needs to be explicated further in business network research. As Pettigrew (1985) notes in his Process–Context–Content model, the theories and subject area under investigation as well as the content of the study context should be in tune with each other. This means, consequently, that by using temporally laden terms, the methods and theories should follow suit. So far, the theoretical perspectives used have seldom combined all three perspectives from a temporal point of view. Here we address the question of how to understand network theory with a temporal focus.

Relationships between actors form the basic concept for understanding networks in business-to-business contexts. Interactive relationships form the glue for networks to come into existence. Relationships have life courses. Relationships emerge and develop or fade away within a certain time span indicating temporality, and the role of time in order to establish, enhance, strengthen and develop relationships is therefore crucial. In addition, deterioration and termination of relationships are also temporally embedded, i.e. they relate to other events and event structures in relationships.

The focus of the article aims to look in more detail at the temporal dimensions of business networks in industrial markets. First, we propose a temporal-theoretical perspective of networks in business which we define as *event networks*. This view stems from the fact that networks in business are related to time and space as fluidly ongoing processes existing in the past, present and future. The 'past-loadedness' of events residing in actors' experiences and memories; the present based on earlier and possible future events; and the 'future-loadedness' of events with expectations, hope and fear for what may happen, are aspects inherently built into business relationships. This relational understanding of time has been proposed as a way to approach processual analysis of interaction between actors in business-to-business dyads (Halinen and Törnroos, 1995). Here we aim at going a step further by putting events into focus. An event has been defined as 'something that happens: occurrence' or 'to happen: outcome' (*Merriam-Webster's Collegiate Dictionary*, 1993: 401). However, we define an event in the following way (see Figure 1):

> An event is an outcome of human acts or changes caused by nature.

Despite the difficulties in separating them analytically in a time perspective, according to Norbert Elias' (1992) essay on time, events in principle have two sources. One source is humans, the other is nature. Human-made events may be intended or unintended in their consequences. Nature has no intentions. Events, consequently, are outcomes of acts that are human-made or nature-based (i.e. events caused by nature are confined to the region in which it belongs, with Hurricane Katrina or the extensive forest fires in Australia and Greece being recent examples). Human-made events can, in some cases, be global in scope; for example, the ideas about global warming and the avian flu scare. See also Beck (1998), where he posits that, 'In the age of risk, society becomes a laboratory with nobody responsible for the outcome of experiments' (p. 10).

The effects of human-kind can be long-term as well as spatially 'punctuated'; that is, locational-regional or global, depending on the type of event being dealt with. Some natural phenomena are uninfluenced by humans (earthquakes, volcanic eruptions, ebb and flow, etc. as well as many cyclical elements on Earth and in the cosmos). The most nature-induced cyclical effects still seem to be purely natural and stable, untouched by man, such as seasons and day and night. Human–human and human–nature events and relations can have a global reach and are caused and enforced by human acts and event creations (global warming and the depletion of the ozone layer, for example). See Adam's (1996) thought-provoking essay *Timescapes for Posterity.*

Events in a business network perspective can be seen as temporally specific outcomes of performed acts by the actors. In saying this, one has to take into consideration that new actors may enter into a network by performing acts that push former actors to exit from the focal net and change position in the broader network. The reasons can be self-created events or induced by other events.

Based on the foregoing analysis, we define event-based networks in the following manner (see Figure 2):

> Event networks are time-based connected event relationships.

Event networks have the following characteristics:

- The smallest unit of analysis is an event dyad (two interrelated events);
- An event is always an outcome of human acts or caused by nature;
- Actors (or nature) are the key mediators of events;
- Human acts can result in both intended and unintended consequences;
- Events caused by nature are non-intentional;
- Events are always contingent on the existence of some antecedent events;
- Objectively, event networks have no beginnings and no endings;
- Seemingly similar events are differentiated by their position in time and space and through their loadedness;
- Events may be loaded by the past or the future, and/or by the source or the

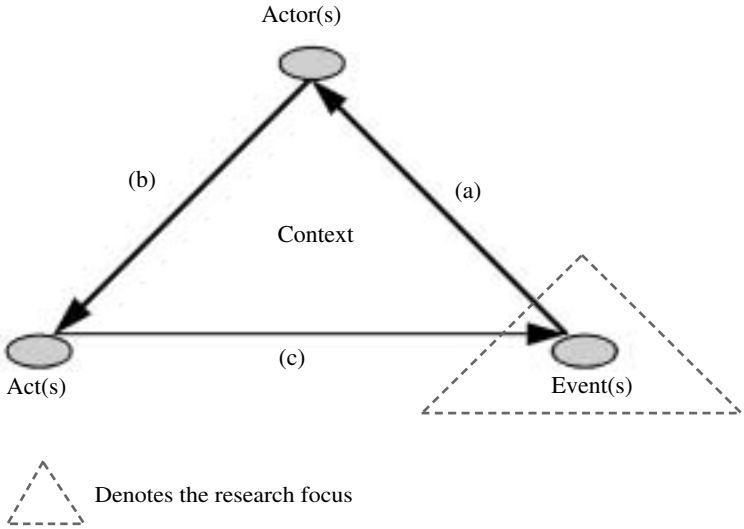


FIGURE 2
The triangle of event network relations

affected objects (e.g. actor loaded);
- Connected events are always separated by time;
- Event networks may appear as streams of interconnected events (event trajectories).

The event concept is used here as the general building block for the model, representing a basic, albeit often an implicit, temporal unit used in social research (Clark, 1985; Adam, 1995). Adam (1995) calls for supplements to 'the traditional conceptual tools . . . if social science is to become adequate to its contemporary subject matter' (p. 9). These concepts are 'simultaneity, instantaneity, uncertainty and implication' (p. 20) – of or about what, we may ask, if not events? We live both *in* time with recurring (as well as extraordinary) events and in times *when* things happen.

In Figure 2, events come into the triangle when acts are noticed (perceived) by the actor(s). *Actors* (here mainly referred to as human beings, e.g. industrial marketing managers) are the reactors on stimuli from events taking place. Cognition and sensitivity towards events – evocation and selection – constitute the conditions in a certain situation to act. Furthermore, actors may imagine future consequences of the present events and act accordingly: neglecting, withdrawing or engaging proactively. This relates to the used network approach and its basic constituents.

Acts and activities are the outcome of how actors have been able to identify events, how events have overcome the stimulus-response barriers (thresholds), how the events are interpreted and given meaning, and how willing an actor is to go further by action in response to perceived stimuli. Response to stimuli can be proactive (creating acts and new events), reactive (following and reacting passively) or neglect, indifference (i.e. no intention to act). Acts and action are presented by Schutz (cited in Clark, 1985) in the following manner:

> Action is spontaneous activity towards the future in which pretensions into the future are part of memory and hence are merged with pretensions which are reflecting the ways in which attention modifies experience. (p. 45)

This gives reasons for comments. We may add that experience also modifies attention. Actors are creating events and react by noticing other events which, combined, can influence new activities. The triggering signals (irritants) for change are caused by events. Håkansson and Johanson (1985) and Håkansson (1987), in their presentation of the ARA model, look specifically at networks from the actors' perspective. The same accounts for the modified and 'de-limited' view of Håkansson and Snehota (1995). Actors are seen as controlling resources and performing activities coupled to business. The inherent characteristic of event networks in business markets proposes theoretical, methodological and empirical extensions to the study of business networks. The *event* in the model forms the core perspective for understanding temporality and change in business networks. Events may be seen as the organizing device to a network and its actors and their behaviour and their willingness to act and create other events. Events have different sources and take different forms as depicted in Figure 1.

Time and Events

Events in networks relate to how time is incorporated into our understanding of business networks. Time can be defined in numerous ways, and it is one of the basic ontological presumptions existing in reality (space being the other). Time, however, is a tricky term to define and even more problematic to understand coherently and explicitly in social science research, including marketing. One general definition of time is 'a non-spatial continuum that is measured in terms of events which succeed one another from past through present to future' (*Merriam-Webster's Collegiate Dictionary*, 1993: 1235).

This notion of the term falls well into a social science context and can be used to understand the event aspect of business networks in marketing. It accepts the relational time notion (i.e. noting past, present and future modes of events as existing and being embedded into each other). Here it should be mentioned that

the relational notion is not congruent with the 'clock-time' notion; instead, the concept deals also with a wider understanding of time as sensed, lived and experienced (see Adam, 1995). It also deals with the fact that 'present' is affected by both the past and our presumptions about the future. Additionally, it considers events as the basic units, or building blocks, of social time. Using events as a perspective to look into networks is proposed as being a fruitful way to understand what is taking place, and why, in network development and change. Through event networks, one is able to theoretically understand how 'networks work' in different settings.

Time can also be defined as 'the point or period when something occurs' (*Merriam-Webster's Collegiate Dictionary*, 1993: 1235). The definition is temporally 'snapshot like' and/or processual in nature but it offers possibilities to relate to events as 'surprises'. Surprises are treated as 'the unexpected occurrences', such as random propinquities, changes coming from inside or outside the focal net, or turbulent and dramatic changes, as well as other critical incidents in existing contexts. One recent example is the sub-prime disaster in the USA, now rippling through the worlds' financial institutions and maybe creating a new widespread recession. The past loadedness of events can add insights to the importance of an event; for example, history of the industry and relations and how it affects a certain situation or context. This definition of time is not as all-embracing as the first definition. It takes on an additional meaning of time, however, which should be accounted for in understanding business marketing and the change of networks especially. The role of timing can be seen here as a way to approach this notion of time in business marketing. Timing may be defined as the 'selection or the ability to select for maximum effect of the precise moment for beginning or doing something' (*Merriam-Webster's Collegiate Dictionary,* 1993: 1236).

Time-lag takes the perspective of cause–effect dimensions looking at time as separating two connected events in a specific social setting. Reaction time or 'latent periods' are other connotations of time-lags. This can be understood by using Clarks' notion that time-lag oriented research has 'the intention to discover the ways in which effects emerge at some time after the initial intervention' (Clark, 1985: 39). In event network terms, the events affecting networks can materialize and become real after a time-lag from where a prior connected event has been created. Defining and understanding the 'root cause' often triggers acts.

Business networks are also influenced by time-lags because of the existence of reaction times of different kinds (delays in decision-making and deliveries of goods and information, bureaucratic hindrances, political decisions and regulations, etc.). *Waiting costs* for network actors, caused by delayed solutions outside their sphere of influence, might be a consequence of this. In business networks, this materializes, for example, in the form of so-called 'black holes'

(Hedaa, 1995). Black holes are found where capable and willing actors cannot act because of unfavourable opportunity structures in a network. Waiting in line, traffic jams, delayed or cancelled aeroplanes are prominent examples.

Clark notes also that time is relative and that time should be understood as being contained *in* events (inspired by the thinking of Bergson and the development of quantum mechanics):

> According to the modern viewpoint time-reckoning systems are constructed by selecting various events in the form of sequences or trajectories, from arrays of events which can be apprehended relative to one another. (Clark, 1985: 40)

In this connection, Clark warns researchers not to be trapped into choosing event trajectories in a pragmatic way and from the point of view of the researchers themselves. We agree on this statement, since social time and events are relational, context-bound and embedded, as well as based on the actors' variations in perceptions, cognition, interpretations and on their positions in the business net.

Time is characterized by many different aspects (based on Clark, 1985: 41):

1. Time is socially constructed and consists of inter-subjectively known trajectories of events;
2. Time exists through many temporal units (e.g. days, weeks, months and socially/culturally based notions of temporality – see Adam, 1995);
3. The passing of time is attributed to identifiable phases within temporal units (after Gurvitch, 1964);
4. Time frames consist of a distinctive orientation to the past/present/future, including images of the future;
5. The production and reproduction of time-reckoning elements and systems in society are embedded in practices.

Definitions should be put into context. The marketing of industrial products and services taking shape through relational exchange in networks can be approached using relational time and events as a basic point of departure. The first relational time-notion means that relational networks have a past history, a present situation of relations and issues to consider and actors are also loaded by future prospects (expectations about coming relationships and gains, for example). How networks have come into being as an existentially relevant form of relationship can be related to both macro and micro forces in society, together with technological change and new production systems (see Figure 1). These issues have been extensively dealt with by Castells in his book *The Rise of the Network Society* (1996).

This takes us directly to the other point. Events relate both to macro and supra-macro forces affecting business as well as events taking place within the network. Intra-net and extra-net forces in the competitive and the social/natural

environments are the central event 'arenas' affecting and changing the network. Issues like mutually oriented adaptation, trust and commitment as well as bonding mechanisms and possible dissolution of relations are framed around, affected by and affect relational change and positioning. Adaptation, bonding and trust are factors which characterize intra-net relationships, whereas the 'extra-net' relations address the needs for adapting to changes in the 'informational society' and global and regionally specific networks (Castells, 1996, takes predominantly, but by no means exclusively, the 'outside' view in his analysis). Network-related extra-net forces consist of, for example, competitors, important events taking place within the industry, new inventions in core technologies and production and marketing methods. Extra-net 'outside forces' to the focal net address events dealing with societal change, such as political changes and natural forces (e.g. pollution and natural disasters and hazards). Other types of regional and global changes, especially those affecting business directly or through weak links, also belong to this category. The opening of China for business, rise of the Tigers in Asia and the formation of New Europe in the 1990s are some examples of extra-net forces. Other recent examples may be the neo-conservative influence on US policies, various terror attacks around the world, pan-epidemic hazards, and the 'Danish cartoons' impeding exports to Moslem countries.

To come to terms with these issues, we also have to develop a terminology for being able to present concepts with new meanings into business network research and methodology. The event network proposed here is one of those. Other terms relating to temporality and networks (especially denoting evolution and change) are the heteronomy–homonomy–autonomy continuum and the existence of surprises in business which opposes the strongly forwarded view of stability in networks (Hedaa, 1997). Reality is in fact loaded with events that are characterized as unforeseeable and take the actors in a business by 'surprise'. The way in which an event comes into play is affected by the type of context in which actors act and deal with events.

Autonomous actors are seen as those who are taking action without being externally controlled. It also means 'the quality or state of being self-governing' and 'existing or capable of existing independently' (*Merriam-Webster's Collegiate Dictionary*, 1993: 79). The terms are based on the Greek terms '*Autos*' (self) and '*Nomos*' (laws). The terms are also used in the philosophy of Kant. Autonomy means 'the freedom to act'. When we are talking and understanding freedom, the autonomy term is useful, meaning 'the freedom from external authorities' (*Merriam-Webster's Collegiate Dictionary*, 1993: 79; see also Hedaa, 1997). In most management and economic theories, the autonomous actor has been the most used as a base. Recently this has been questioned to a notable degree.

Heteronomous actors are under the control of other actors (subject to external

controls and inquisitions such as laws and regulations, power, etc.). 'Heteros' comes from the Greek meaning 'other'. Hence, a heteronomous actor is subject to laws, rules and norms given by others.

Homonomous actors are acting in a situation where mutually agreed and controlled norms, rules and laws prevail. This concept is not applied previously in economic research. The position between the two extremes (i.e. autonomy and heteronomy) falls well into the network views of marketing, where actors through negotiations come to terms with each other.

To sum up, events may be used as a key to build up a more coherent theory of business markets and marketing in the form of event networks. Taking this as an ontological and epistemological standpoint, theoretical models based on events in business networks can be developed. Furthermore, it is argued here that these viewpoints and extensions to existing models of business networks can be used as a methodological device. In practical research one should be able to detect and follow relationships over time and grasp event-based change processes and the development of networks. The event network approach offers a novel way to look at networks in their empirical settings. Trajectories of connected events can be seen as the key cohesive determinant for the change of business networks. We think that this approach could also be used in other contexts studying social issues through networks.

The Event Notion – A Conceptual Analysis

The *event concept* can be analysed in a multitude of ways. The concept is elusive and has, as well as the time concept, many different definitions. In addition, it has many parallel and interconnected, or embedded, meanings. The attempt here is to highlight central aspects of this elusive concept in network terminology and contexts. It is hard to give an all-embracing view of all the important aspects of events. We have used perspectives from other social sciences, including social network research, sociology and philosophy of social science, taking a few examples to shed some light for understanding the inherent characteristics of events.

In the following, the event network is analysed in terms of its constituent parts. Initially we examine the event concept through a tentative list of perspectives inherently contained in events. The list (see Table 1) is then analysed using the conceptual perspectives about events through literature research, and thereafter we put our findings into specific business network settings in order to focus on real-life business markets and marketing. If we take events or event dyads (how events are related to each other) through mediating variables (actors and acts), we may want to define some properties of events before we can go further with event networks. An event can be analysed in terms of stimulation effects

TABLE 1
The event concept – some core characteristics

Characteristics of events
• Intensive/extensive
• Frequent/infrequent
• Present/absent
• Confirmed/disconfirmed
• Single/multiple
• Synchronic/diachronic
• Clarity/[equivocality/ambiguity]
• Overlapping/distinct
• Relational
• Direct/indirect
• Single vs multiple (outcomes)
• Visible/invisible
• Sequential/simultaneous

(causal factors) and in terms of outcomes or results (consequences). We shall illustrate most of the identified features with examples from observations of events in business markets and marketing.

Intensive/extensive

Events can be intensive and particularistic, such as when a critical delivery arrives late causing delays in one customer's production and servicing of the customer's customer. The outcome may be severe and weaken the relationship, but it is confined to this particular relationship. Intensive can also refer to the intensity of interaction between business partners in a business relationship; for example, launching new products and services to existing customers is often intensive. Intensity comes also into play within seasonal markets: 'high' versus 'low seasons' of demand.

Events can be extensive, such as when a competitor introduces a new attractive technology in the market, or a new price structure affects the majority of customers. The outcome may be other suppliers' loss of business with several customers and an acceleration of investments in research and development.

Frequent/infrequent

Events can appear frequently, such as when the phone exchange has few and busy lines and consequently customers have difficulty getting in contact with a supplier. Business interaction is more frequent and 'standardized' in dealing

with basic and standard products (raw materials and spare parts which are standardized, for example).

Infrequent events may be illustrated by replacement of an important boundary spanner, say a new salesman replaces the old. Large investments and project business are infrequent but complicated and involve mutually important interaction.

Present/absent

In some dynamic markets, product development and differentiation take place at an erratic speed; in other markets there have been no innovations for years. Japanese and Korean firms were more or less unknown in the 1950s, yet today they are present in most markets, including industrial markets, as well as new entrants from Asia.

Events appear as stimulants or irritants to certain actors, leading them to react. But the absence of events may stimulate imaginative actors to pro-act in order to create events in a perceived favourable opportunity structure. Absence may also signify a break of routine expectations, such as goods not arriving according to plans.

Confirmed/disconfirmed

If an event is similar to earlier events, this reinforces and confirms customers' perceptions and attitudes towards the supplier. Variations from earlier events disconfirm experience, but may confirm new agreements. Positively confirming event trajectories create reinforcing virtuous circles, whereas negatively confirming event trajectories create reinforcing vicious circles. To change a vicious circle into a virtuous circle takes a number of disconfirmations of negatively loaded events.

Single/multiple

In launching new products, a supplier may create a single event, like mailing a brochure to existing customers or putting together a campaign with trade or road shows, customer education, articles in the business press, new product training for sales and service people, and so on. Here different events are noted but reinforce each other.

Synchronic/diachronic

Synchronous means happening, existing or arising at precisely the same time, or recurring or operating at exactly the same periods. Synchronicity is the co-

incidental occurrence of events that seem related but are not explained by conventional mechanisms of causality. Disparate actors may draw from the same common pool of knowledge and scientific discoveries, and get similar innovative ideas leading to analogous events at the same time. In the fullness of time, or situational ripeness, where new and similar ideas, products or services are presented, for example, innovations of the same kind can be more or less mysteriously and simultaneously accepted by the market. The time compression through Internet communication is approaching synchronicity (see Hassan and Purser, 2007).

Diachronic occurrence of events characterize, for example, imitations, and illustrates an important aspect of the problem of being a first mover or a follower in market innovations.

Establishing programmes of continuous improvements or lean management may be predominantly synchronic because many companies today subscribe to this fad in management philosophy. But they are also diachronic in the sense that such programmes are inspired by early Japanese experience, and they are diachronic in contents of a programme because a sequence of events within each programme creates an event trajectory aimed at increased efficiency and effectiveness.

Clarity/[equivocality/ambiguity]

This dimension is mostly about how events are perceived and interpreted by the actors. March (1994) posits that:

> Ambiguity refers to lack of clarity or consistency in reality, causality or intentionality. Ambiguous situations [events] are situations [events] that cannot be coded precisely into mutually exhaustive and exclusive categories. (p. 178)

Limitations in actors' perception of causal event nets constitute ambiguity. Effectual event nets constitute uncertainty (or risk if actors can assign probabilities to the various outcomes). Ambiguity, hence, can be seen as a function of an actor's causal event net horizon. Weick (1979: 174) posits the importance of this by stressing that an input (event) is not equivocal because it is devoid of meanings or has confused meanings (both of these connotations are associated with the words 'ambiguity' and 'uncertainty').

Equivocal events create puzzles as to what of many possibilities has caused the event. For example, it will make a difference if a late delivery is assumed to be caused by a mistake or caused by opportunistic preference of one customer over another. Notice that the cause of the event can be interpreted in more than one way, and the way cannot be compromised. If you determine one cause, you must reject the other. Ambiguous events refer to an ongoing stream of events that support several different interpretations *at the same time* (Weick, 1995).

Overlapping/distinct (separate)

Usually we perceive selling and servicing as two separate sets of events. That may be truer when establishing new supplier–customer relationships. When customers decide to replace old equipment, the quality of service events may be more determinate for decisions than the sales effort. Service events and sales events overlap in the outcome of events. Overlapping events may also occur when two suppliers are competing for the same customer at a tender, whereas selling events may occur to competing suppliers as distinct and separate if the first seller has closed the sale a short period before the second seller gets into contact with the customer. These events may be more or less related to each other. They are related in the sense that one event makes a difference for the occurrence of another event.

Relational

The term 'relational' refers here to temporal loadedness and to time as being relational in connection to the past, present and future modes of temporality. An event taking place at present is temporally connected to antecedent events. This concerns, for example, inputs from a seller in industrial markets as being historically developed through trust and commitment between a buyer and a seller. In industrial markets, long-term business relationships are common. The relationship is also loaded by future expectations about business gains as a consequence of the business relationship.

Direct/indirect

The cause of an event, or the outcome of an event, can be direct or mediated by intervening variables, or delayed in time. Events can be predominantly tightly or loosely coupled. Our research shows, for example, that on average a sales person needs 12 contacts over a period of six months to get an order in a newly established customer relationship in the market for industrial components (Hedaa, 1990). The first contacts are highly indirect to the order, whereas the last encounter is directly connected to getting the order. The sequence of sales events may be interfered with by other unknown events, such as word-of-mouth experience exchanged with buyers' colleagues. Also, other 'weak events' can trigger further connected relationships.

Visible/invisible

A configuration of connected events may be so complicated that no single actor can have a total and correct picture of either the network of involved actors or

the event network between an initiating event and the final outcome. Witness how history is reinterpreted and rewritten over time. But even in simple and linear cause–effect relationships, critical events may go unnoticed because of missing feedback. Customers' complaint behaviour discloses only a fraction of unsatisfied customers. The events leading to customer defection may be invisible to marketing people.

These facets of the event concept in industrial business show some features that can be detected. There exist additional meanings and perspectives in events in general and network events in particular. Further research should highlight these and also deeper insights from practice concerning the presented characteristics in different empirical settings.

Business Networks as Event Networks

How does a network in business evolve and change over time (and space)? Industrial markets have specific forces affecting them. All networks are developed very heavily from the inside of focal nets. As noted earlier, this concerns the mainstream of business network research.

Time can have different 'paces' or intensities ongoing simultaneously causing change as well (quick and dramatic changes, cyclical developments in the form of economic cycles, product life-cycles and the like, and slowly progressing change in the production systems into which a business and its industry are embedded, for example – after Braudel). These changes take place as parallel ongoing processes; the nature-based, ecological changes not to be forgotten (see Figure 1).

How do networks change and what can characterize their evolution? Change and evolution should be based on *understanding the event structure* experienced in the past, in the present and with expectations for the future, in terms of the network and its embeddedness in relation to other actors, in space/geography, in time and within its relevant context. Networks are also learning structures where continuous interaction between events and actor networks and networking take place (see Figure 3).

The model in Figure 3 depicts some core features coupled to the business networks approach. The model aims to show how events emanating from inside and outside the focal net create change and adaptation mechanisms to come into play. Furthermore, the model aims at showing the temporal embeddedness of networks forming event trajectories over time in a relational manner; network-learning change, its functions and configurations over time. It is through events that experience, trust and commitment are created in the form of learning and unlearning processes.

How do we develop the simple model (see Figure 2) of the event network into

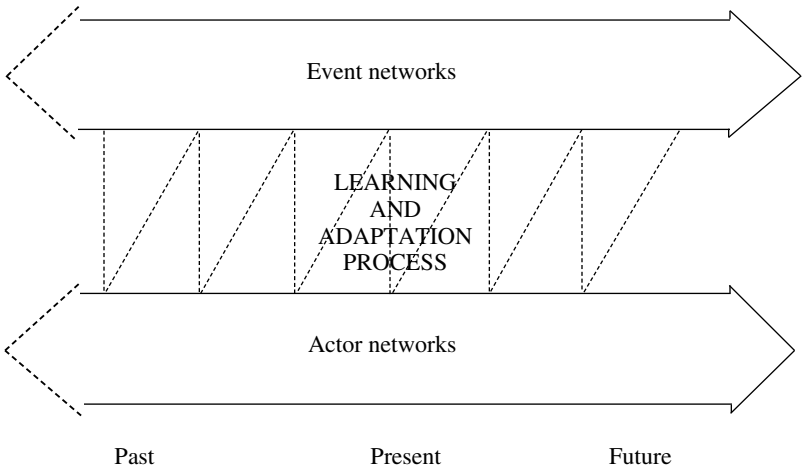


FIGURE 3
Event and actor network relationships over/in time

a more complex set of connected actors? The 'soft school' within operations research (Soft Systems Management – SSM) can give us some guidelines (see Rosenhead, 1989). Eden (1989) explicates the 'strategic options development and analysis' through cognitive mapping as a 'soft approach' to operations research in management. In connection to this approach, one point of departure is the role of events and how these are perceived and handled:

> So it is the interpretation of an event that is reality, rather than the perception of it. Action arises from the meaning of situations, and the meaning will vary from one individual to another even if the characteristics of the event are agreed by both individuals to be similar. (Eden, 1989: 23–4)

Checkland (1995) models an event as being affected by time-lags. The 'life-world' according to him is always in a state of flux from where perceptions and ideas emanate through interaction. Some parts of this ongoing flux over time are perceived and evaluated (in our terms, by connected actors; in Checkland's terms, by the 'system'). Some of these evaluations are then transformed into decisions to act which lead to acts and action into the 'flux'. This causes time-lag between the reasons and decisions to act (through the appearance of events, the perception of events and the interpretation that gives meaning to them).

Checkland (1989) defines managing as taking place through the 'continuous flux of events and ideas' (pp. 78–80). These perspectives can be compared with the basic tenets of the event network model (see Figure 2). Event nets as specific

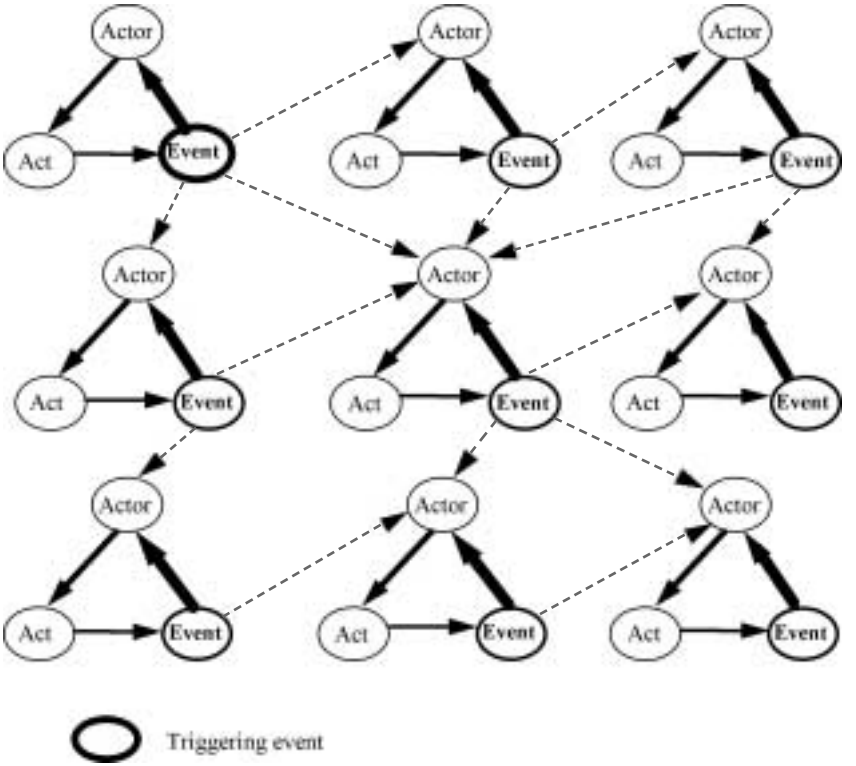


FIGURE 4
A hypothetical event network

confined entities and event networks as multiple interconnected event structures can be modelled (see Figure 4).

Some Examples of Critical Events Causing Change

Here we use a selection of short cases as examples from real-life situations characterizing different kinds of events. Events affecting change and causing acts and further events by actors are presented. They indicate inside-out (or outside-in) events of different types and show also direct and indirect relations to business networks. We do not attempt in this article to go deeper into these cases. More elaborate analyses need separate treatment using the event network notion

and model as a base. Hence, inside events versus outside events are distinguished. We exemplify different industries and technological aspects as well as problems appearing as surprises and escalating events. An event-based business network can be analysed in a manifold way.

Events from the outside

- Lady Diana Spencer, the Princess of Wales, died in a car accident in Paris in September 1997, shadowed by paparazzi photographers. This event had a great impact on the media, printing press industry and on the paper markets as well as the production of books, journals and printing materials. The specific event has spread to many other industries; for example, it boosted industrial marketing of printing paper with some time lag. This exemplifies how an outside and seemingly unconnected and distant event affects business markets.
- Greenpeace launched an environmental campaign in 1994 against the Finnish paper industry through a series of carefully planned actions outside some of the large companies in Helsinki and around their production units in Finland. Simultaneously, a well-covered media tactic was used, mainly in Germany, through media exposure about the campaign. Some core themes were to save the 'virgin forests' still existing in Eastern and Northern Finland, pollution by the industry, environmental problems caused by transport, the unplanned and underdeveloped systems of recycling paper, water pollution, use of dangerous bleaching chemicals, and digging out swamps and wetlands. A copy of the large German magazine *Der Spiegel* was released at the same time called *Das Plagiat*, having as its major theme the Finnish forest industry and its polluting activities (based on the Greenpeace activists views). The campaign was also directed towards the large buyers of paper in Germany. This event (or sequence of events during a specific period, and its timing) had a severe effect on the paper industry and its so far stable network and image based on high-quality paper grades and prompt and efficient deliveries. Adaptation and change has taken place since that after new actors moved into the network and a critical incident took place affecting core players. This case shows a planned outside critical event and how 'outside actors' infiltrate directly into a stable business network (Törnroos, 1998).
- Brigitte Bardot and the fur industry is another exemplification of events affecting marketing from the 'outside'. The campaign emanating around the well-known actress had severe effects on the whole fur industry and caused severe damage to the Eskimo population relating their income to the industry in question. The case exemplifies an outside net event, drawing on the '*baby*' seals' protection. It gives a 'human face' to the question and environmental concerns. This is in tune with other recent actions with an environmental stand

showing how the network expands and that business is not anymore only business when different and difficult ethical and ecological questions arise causing friction and image creation. The environmental wave, of course, can be also proactively used in business including such considerations in companies' strategies and tactics. The success of The Body Shop is a good case in point. Image is a sensitive and powerful issue in many markets, as our first example from the paper industry shows. The role of sustainability issues is sensitizing many consumers and business managers of today to ethical and environmental aspects.

- In the Spring of 1997, the Danish producer of agricultural chemicals, Cheminova, was accused of killing farmers in Guatemala because of inadequate information and training of farm hands in the use of spraying equipment. A documentary was broadcast on national television, creating heated discussions on social responsibility, ethics and roles of shareholders, investors, directors, and management of the producer company. The role of importers, distributors and users of pesticides had a minor role in the broadcast. The public's reaction of the news story brought subsequent attention to a similar case where an EAC-Zeneca joint venture in south-east Asia was accused of killing farmers in Thailand. These events attracted much attention and energy to the involved parties and created damage to the business and reputation of the firms involved. Furthermore, many shareholders disposed of their shares, leading to a fall in share prices.
- Politically induced events can be exemplified by the tobacco industry. The tobacco industry had to pay fines of up to 250 billion dollars in the USA after a long legal process. Both legal and political reasons can be said to coincide and affect a specific market and its actors despite powerful lobbying. Negotiations with the industry have led to an agreement to give payments covering the caused damages over a time period before the case was taken up by the Supreme Court. Threats from 30 states in the USA backed up the legal process. One of the tobacco companies actually admitted that their products caused some health problems before the Supreme Court was to handle the case. The tobacco industry had to adjust to the situation. Also, further law suits, individually and collectively, could be avoided – at a large cost. Alternative courses of action were risky and the outcomes uncertain.
- Recent macro events triggering business and markets were induced by the breakdown of the Berlin Wall and the emergence of 'New Europe', as well as the opening up of China for business and foreign direct investment (including the rise of Tigers and south-east Asian economies). As a specific drawback, one can mention the financial and monetary crisis started in 1997, especially the devaluation of the Thai Baht and the driving down of the currencies in Indonesia, Malaysia and the Philippines. Further, business escalation in specific regions can possibly be seen in Latin American countries (Chile, Brazil,

Mexico and Argentina especially) as well as in India, if political openness is achieved to boost investments from the outside. Large development programmes have been planned recently. Additionally, one can already distinguish pre-existing event structures which mature into a temporal sequence, triggering off economic development in new regions.

Inside-out and escalating events

- The Danish consulting company Personal Management Institute (PMI) case exemplifies an event creating dissolution of an ongoing consultant–client relationship. Tele Danmark Forlag (TDF – publisher of phone books) made a two-year organizational development contract with PMI aimed at increasing empowerment and team building. The consultant–client relationship was dissolved after only half a year. The triggering event was the nervous breakdown of one of the employees during a team-building session. Union representatives exploited the event in a stream of antecedent conflicts between the union and management to stop the organizational development programme. Furthermore, the event was brought to the attention of the national television channel and was broadcast during prime time to 20 per cent of the Danish population. Despite the fact that 90 per cent of the employees were satisfied with the organizational development programme, this single critical event – an unintended consequence of the team-building sessions – did not only lead to dissolution of the programme but ruined the image of the consulting company. It remains to be seen whether it will be possible for PMI to survive as a consulting company. Potential clients may perceive it to be too risky to involve themselves with the consultant firm because of the negative past loadedness brought to the attention of the public. Also, the TDF management may have difficulties in establishing a renewed team-building programme with another consulting company because of uncertainties about similar future (future-loaded) events (Hedaa, 1997).
- The 'Nokia Balalaika Show' in Berlin in 1994 exemplifies yet another, albeit self-made, event. On 18 June 1994, the Nokia-sponsored Balalaika Show was performed in Berlin. The show consisted of a concert featuring Leningrad Cowboys, which is maybe internationally one of the most famous Finnish rock bands, together with the Russian Red Army Ensemble in the Lustgarten. This concert was the result of co-operation between Leningrad Cowboys and the Finnish company, Nokia Mobile Phones. As head sponsor of the concert, the company's main aim was to increase awareness of the name 'Nokia' and through this action strengthen the Nokia brand in Germany – the German market being the company's largest European market. This was also the first time a Finnish company got involved in a project of this magnitude. The case,

to our notion, represents an example of *event marketing* in its most classic form. The concert was a great success and coincided with the final Russian troop-withdrawal from Germany being the last reminder of the end of the Cold War. The case exemplifies how timing, the event and space (location) have been thought about together in creating an event with the Nokia slogan 'Connecting People' as the core message. The case shows a *self-made event* in order to create publicity and image. Proactive event creation materialized by a single actor can be successful and create massive and favourable publicity. On the other hand, it can be very sensitive and many risky moments can be involved (Kronvall and Törnroos, 1997).

- The Swedish special steel case brings networks and technology into the fore. In the 1970s, during a period of ten years, a new steel-making technology was developed by ASEA (ABB today) steelworks in Söderfors. A metallurgic material was developed in collaboration with other related firms. The process could make steel for in use tools which could have double the lifetime compared with conventionally made tools. An intra-net event (invention of new steel-making technology for tool making for the car industry) was, however, not 'ripe' for use on the markets because the potential users' technologies did not temporally follow the new invention. A time lag and new technological innovations in machinery for car manufacturing made the new tool-making and steel useful and relevant for the car manufacturers (Laage-Hellman, 1989; Axelsson, 1995).
- Product-related events triggering other events can also be found. Blockbusters in the medical industry, improving living conditions and rewarding shareholders, being one affecting both inside and outside relationships. A classical inside case is the industrial production and invention of cholesterol-free margarine by the RAISIO Group in Finland in the mid 1990s. This invention boosted the firm's marketing tremendously and it could not keep production in pace with the enormous demand that followed. The Benecol product had a positive effect otherwise, because the shares went up by over 400 per cent in a year after the invention. This product development was in pace with the rise of health consciousness and the knowledge about the health risks combined with cholesterol. The event initially triggered an escalating market demand, boosting production, marketing and distribution to new markets worldwide.
- Nature-based events have been accelerating in recent decades, indirectly and in many cases directly affecting business. The contamination of land, water and the living environment are human-made nature events. Floods, volcano eruptions, typhoons, desertification, drought and famine are examples of naturally induced events creating business for some and being devastating for others (for example, coffee farmers in South America due to El Niño). Some of these can be subject to human activity as well.

These exemplifications show some explicit situations that have taken place, illustrating mostly 'surprise events' having a direct effect on networks in different ways. These events have their roots mainly in the outside and affect a network and its focal actors. Also, different types of events are shown, the causes in each case being different. Technological, natural, inside and outside (intranet/extra-net) causes and effects on business have evidently appeared as being the engines for actors to act and networks to change. These roots to certain new events explicate some critical incidents that trigger and escalate business events. Events come into being in different ways and, in some cases, overcoming barriers of communication, creating new events. Events also replace and transform relationships and networks.

Timing becomes decisive in many cases. Critical events can take many forms. They consist of natural and/or human-made and natural disasters. Accumulation of small events causes stepwise and smaller ongoing change processes in networks. When to come to the market or exit from it, or how to change the ways of existing on the market altogether should be considered in timing.

A Note on Method

The real-life examples show some critical events having taken place in practice. To study event structures, the event network should be studied over time in order to de- and reconstruct events by tracing these over time in specific network contexts. In this way, the researcher may be able to grasp the circulation of events, actors and acts. Understanding can be reached by longitudinally tracing the events affecting core actors and their reactions, and inside-out network change-mechanisms.

To grasp the events in time and their connectedness with other events, the use of contextual and longitudinal research approaches are preferable. Historical studies have the problem of overcoming selective memory. Additionally, second-hand sources are often not available. 'Follow-up' studies are preferred in order to trace events and how they have come into being, and how they effect the development of a network (Halinen, 1994; Halinen and Törnroos, 1995). Methods to study event networks should take the following points into consideration:

1. To secure the possibility of following up related events over time;
2. To trace the change and evolution of networks;
3. To effectively describe the study context in order to interpret the interdependence of events and their connectedness;
4. To create an arena for understanding event relations (trajectories) and the embeddedness of event networks;
5. To analyse event networks through the different characteristics of events.

Combinations of alternative, longitudinal and retrospective studies taking process into account can be used (for example, Pettigrew 1992, 1997; Van de Ven, 1992; Huber and Van de Ven, 1995). The following methods are put forth as possible ways of studying event networks:

1. Longitudinal research methods through follow-up studies (Halinen and Törnroos, 1995);
2. The critical incidents technique (for example, Flanagan, 1954; Edvardsson and Luukkonen, 1996);
3. Historical analysis and historical reconstruction;
4. Discourse analysis (for example, Miles and Huberman, 1984);
5. Grounded theory approaches (Glaser and Strauss, 1967);
6. Event history analysis;
7. Critical path methods;
8. The 'garbage can' model (March and Olson, 1972);
9. Incrementalism and muddling through (Lindblom, 1959);
10. Process studies (Pettigrew 1985, 1992; Van de Ven, 1992);
11. Sense-making (Weick, 1995).

Longitudinal approaches should be used to track the event chains and trajectories of time-reckoning elements in networks and their interconnectedness. These longitudinal methods are mainly qualitative in nature. Some considerations in this perspective include:

1. *Understanding* change and interconnectedness instead of only measuring events;
2. The micro–macro–supra-macro relations should be addressed to capture the potential 'roots' causing events;
3. A long enough *time span* is recommended for being able to grasp and have an overview over a 'real process', and identify time lags;
4. Events' intensity and extensity and other temporal horizons should be accounted for, as well as other *multiple properties of the event concept*.

The offered perspective contends, consequently, that event networks add complexity to network research. It stresses the *temporal* interrelatedness and takes a *holistic view*, including contradictions/paradoxes and 'disorder' as (however distracting) facts of life. In stressing this, one should also note the adaptive mechanisms and that a 'way back to a new order' is often to be found. This relates to the laws of thermodynamics and chaos theory (for example, Prigione and Stengers, 1988).

The perspective taken directs the research to a large extent. It makes a big difference if we look at all detected events or only at so-called critical events, for example, or if we limit ourselves to studying behaviours of marketing managers

within a certain sector. If we only look at intra-net actors and their interaction, and event chains, the event network is only partially analysed.

The elusive and multifaceted meaning of temporality, including events, makes the analysis of event networks a problematic area for research. Embeddedness complexity, access problems, event characteristics and the delimitation problems all prevail as stumbling stones for coherent research. The event network researcher needs a careful but well-defined delimitation of the arena for empirical observations. This can be seen as a response to the concept of requisite variety (Ashby, 1956/1969).

Conclusions and Implications

Networks may be seen as event-based structures in context. The article indicates that event-based marketing and event network analysis in particular is a fruitful way to approach the embedded and temporal nature of business networks.

Event networks highlight one important reality of business networks and their change in the context of time-space. Events are the engines for network development and are proposed to be specific types that add to our understanding of networks. Event networks should, accordingly, be studied explicitly as a way to increase our understanding of what networks are about in business marketing contexts. This view could be useful in other human-based network studies as well. To define networks in a theoretical sense and grasp the temporality of these social constructions in business can, according to our notion, be developed using the event-based approach and models.

Problems prevail with this approach and should be explicitly put forth. The following points deserve to be mentioned:

1. It is tricky and difficult to highlight and trace all possible aspects of events in business through research. It is always a limited view that is presented and analysed.
2. Access problems in research often loom large, and it is time-demanding and a complex task to perform.
3. Developing methods to trace and analyse event trajectories and critical events affecting networks needs further research.
4. The event network perspective is still looking at the tip of an iceberg, and additional epistemological, conceptual and empirical studies are called for.
5. The event network approach could benefit from using the notion in social and regional studies, for example.

Events connect business actors with acts and can therefore be used as a general research device in order to trace process and change (compare the dis-

cussion about process research by Pettigrew, 1985, 1992, 1997; Van de Ven, 1992; Halinen and Törnroos, 1995).

Event networks in business-to-business contexts should be cross-disciplinary and use research approaches, viewpoints and theoretical insights developed in other social sciences, which can help to grasp the multifaceted nature of event networks and how they can be studied.

Finally, the practice can profit from the unfolding of events and their interconnectedness in time and space contexts. How it comes into being as reconstructed by an outsider can bring important insights also for 'insiders'. Mapping the events in time-space in practical situations could possibly extend the network horizon of business managers so they more clearly understand the event trajectories and their interconnectedness in real business life. This could hopefully make it possible for managers to move beyond their present 'movement range' and use new possibilities to act – and react – in creating new profitable events in networks.

Note

1. A focal net may be delimited by core actors in business encounters in a certain time period; for example, a seller, a buyer and a main distributor in industrial paper markets. All other actors (competitors, institutional actors, printing press, media, etc.) are, in this case, examples of external actors.

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